

Appl. No. 09/965,253
Amdt. Dated 07/12/2004
Reply to Office action of May 6, 2004

REMARKS/ARGUMENTS

Claims 1-30 are pending in the present application.

This Amendment is in response to the Office Action mailed May 6, 2004. In the Office Action, the Examiner rejected claims 1-30 under 35 U.S.C. §103(a). Applicant has amended claims 1, 11, and 21. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 103

1. In the Office Action, the Examiner rejected claims 1, 2, 5-7, 9-12, 15-17, 19-22, 25-27, 29, and 30 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,509,779 issued to Yue et al. ("Yue") in view of U.S. Patent No. 5,901,022 issued to Ker ("Ker"), claims 3, 4, 13, 14, 23, and 24 under 35 U.S.C. §103(a) as being unpatentable over Yue in view of Ker and further in view of U.S. Patent No. 5,969,929 issued to Kleveland et al. ("Kleveland"), and claims 8, 18, 28 under 35 U.S.C. §103(a) as being unpatentable over Yue in view of Young and further in view of U.S. Patent No. 6,414,849 issued to Chiu ("Chiu"). Applicant respectfully traverses the rejection and contends that the Examiner has not met the burden of establishing a prima facie case of obviousness.

Applicant reiterates the arguments set forth in the previously filed Response to the Final Office Action.

Yue discloses a system for providing electrostatic discharge protection for high-speed integrated circuits. An inductor is connected in series between a conductor and an ESD protection circuit via another conductor (Yue, Col. 3, lines 48-51).

Ker discloses a charged device mode ESD protection circuit. An on-chip inductor is connected between the input ESD protection circuits and the charge-device component of the internal circuit to be protected (Ker, Col. 6, lines 7-10). One of the ESD protection circuits, the ESD clamp 500 is connected between the input pad and the ground (Ker, Fig. 8, element 500).

Kleveland discloses a distributed ESD protection device for high speed integrated circuits. A distributed ESD protection circuit uses a resistor in series with a diode as an ESD element (Kleveland, Col. 5, line 31-33). Another embodiment uses thick field oxide transistors

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for ESD elements. The circuit includes a pad, transmission line elements, diode configured NMOS transistors, and a buffer (Kleveland, Col. 5, line 46-50)

Chiu discloses a low stress and low profile cavity down flip chip and wire bond BGA package. A thermoset transfer molding process from a liquid crystal polymer (LCP) plastic is used to form package substrates, each having upraised standoff posts and a central cavity much deeper than the integrated circuit die thickness (Chiu, Col. 6, lines 64-67; Col. 7, lines 1-5).

Young discloses a Schmitt trigger-configured ESD protection circuit. An input resistor of a voltage divider/clamp reference circuit is coupled between a power supply rail and an input node of a switched driver circuit (Young, col. 2, lines 54-56). A clamping activation threshold reference device is coupled between the input node and another power supply rail (Young, col. 2, lines 57-59).

Yue, Ker, Young, Kleveland and Chiu, taken alone or in any combination, does not disclose, suggest, or render obvious (1) an inductor connected in series between an output of a high frequency circuit and an ESD circuit; and (2) an ESD clamp circuit coupled to the inductor via the ESD circuit between supply and ground terminals.

Yue merely discloses an inductor used in conjunction with an ESD circuit. Ker merely discloses a clamp circuit connected between an input pad and ground (Ker, Figure 8, element 500), not between supply and ground terminals. In addition, Ker discloses the inductor to be in parallel connection with respect to the ESD protection circuits (Ker, Figure 8, elements 400 and 500), not in series with the ESD protection circuit as claimed. Kleveland merely discloses various embodiments of a distributed ESD device. Young merely discloses a clamp circuit that is coupled between two power supply rails. Chiu merely discloses a wire bond BGA package. None of them discloses or suggests a clamp circuit coupled to the inductor via the ESD circuit between supply and ground terminals. Claims 1, 11, and 21 have been amended to clarify this aspect of this embodiment of the invention.

The Examiner failed to establish a prima facie case of obviousness and failed to show there is teaching, suggestion or motivation to combine the references. "When determining the patentability of a claimed invention which combined two known elements, 'the question is whether there is something in the prior art as a whole suggest the desirability, and thus the obviousness, of making the combination.'" In re Beattie, Lindemann Maschinenfabrik GmbH v.

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American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ (BNA) 481, 488 (Fed. Cir. 1984). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or implicitly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973. (Bd.Pat.App.&Inter. 1985).

In the present invention, the cited references do not expressly or implicitly suggest (1) an inductor connected in series between an output of a high frequency circuit and an ESD circuit; and (2) an ESD clamp circuit coupled to the inductor via the ESD circuit between supply and ground terminals. In addition, the Examiner failed to present a convincing line of reasoning as to why a combination of Yue, Ker, Young, Kleveland and Chiu is an obvious application of such a technique to improve ESD protection using an inductor and an ESD clamp circuit.

Therefore, Applicant believes that independent claims 1, 11, 21 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. §103(a) be withdrawn.

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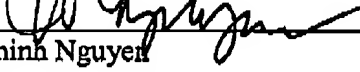
Conclusion

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

BLARELY SOKOLOFF, TAYLOR & ZAFMAN LLP

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By 
Thinh Nguyen
Reg. No. 42,034
Tel.: (714) 557-3800 (Pacific Coast)

12400 Wilshire Boulevard, Seventh Floor
Los Angeles, California 90025

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